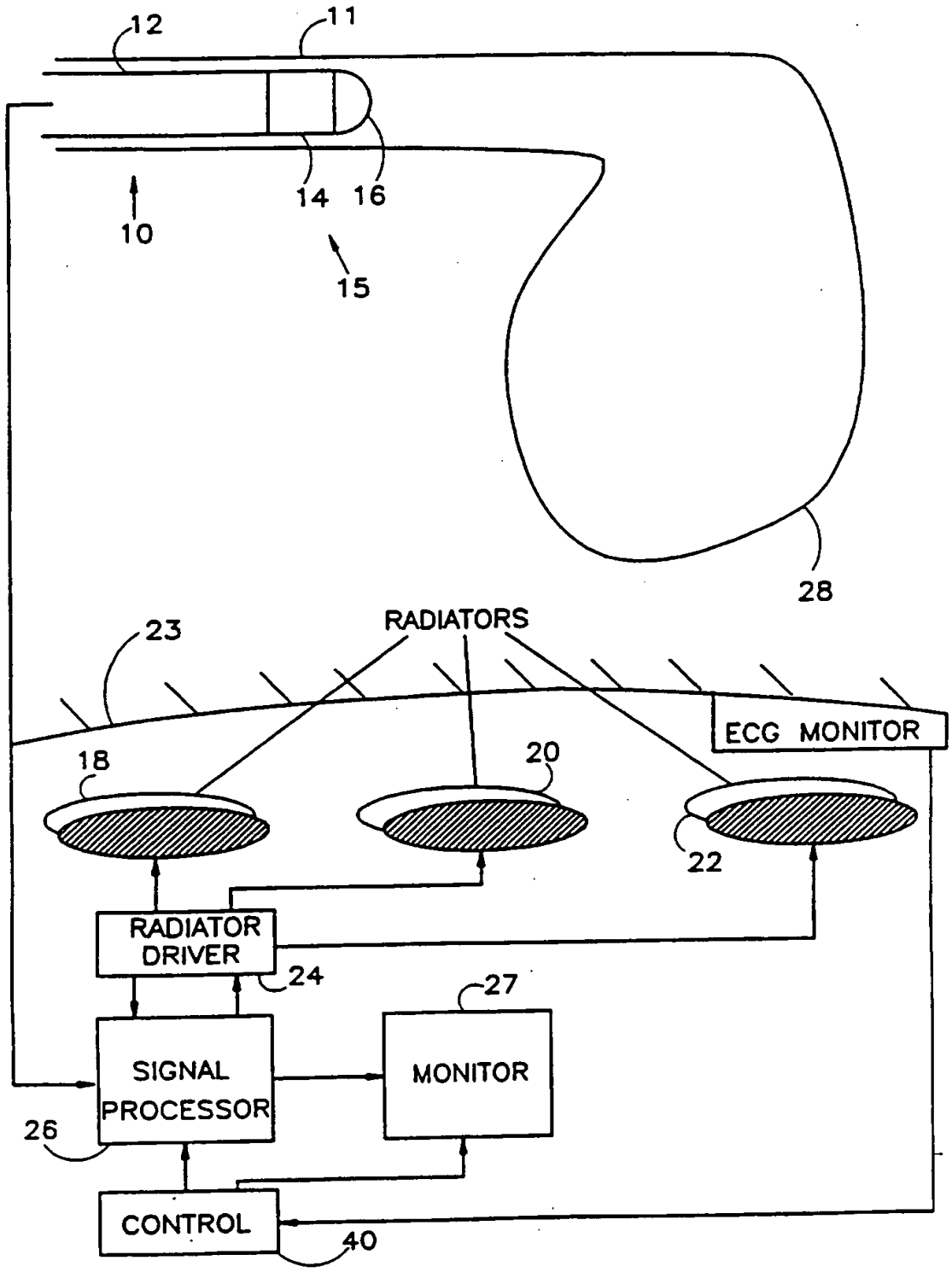
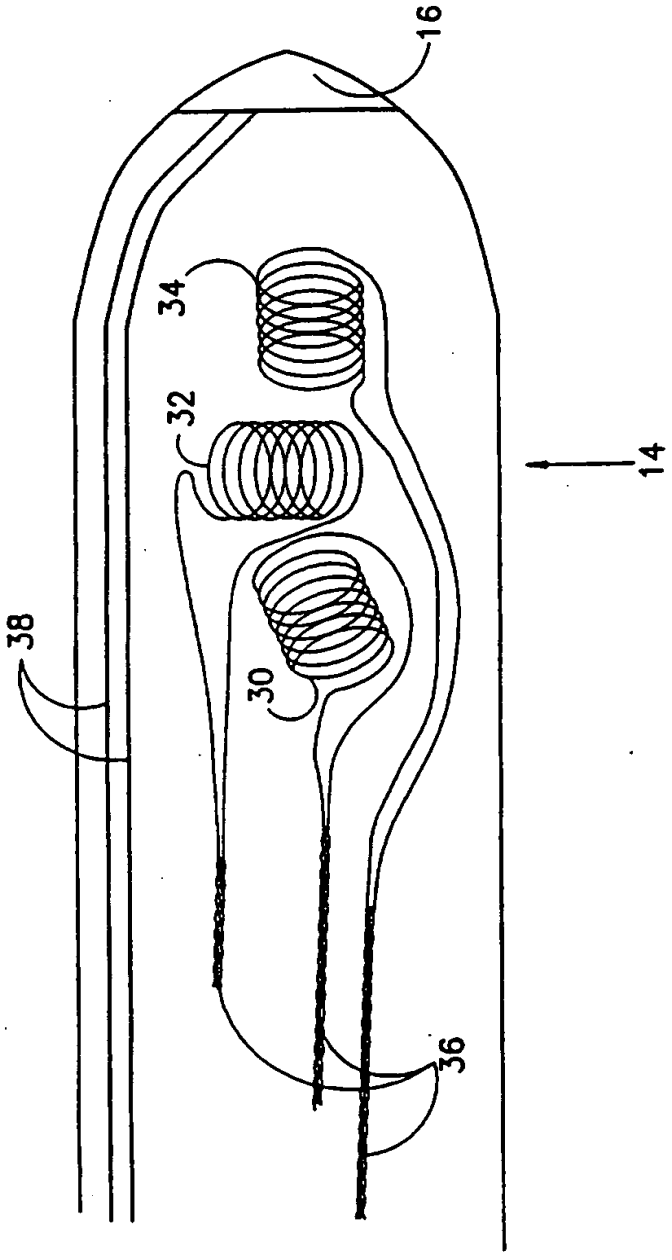
FIG. 1



SUBSTITUTE SHEET (RULE 26)

FIG. 2



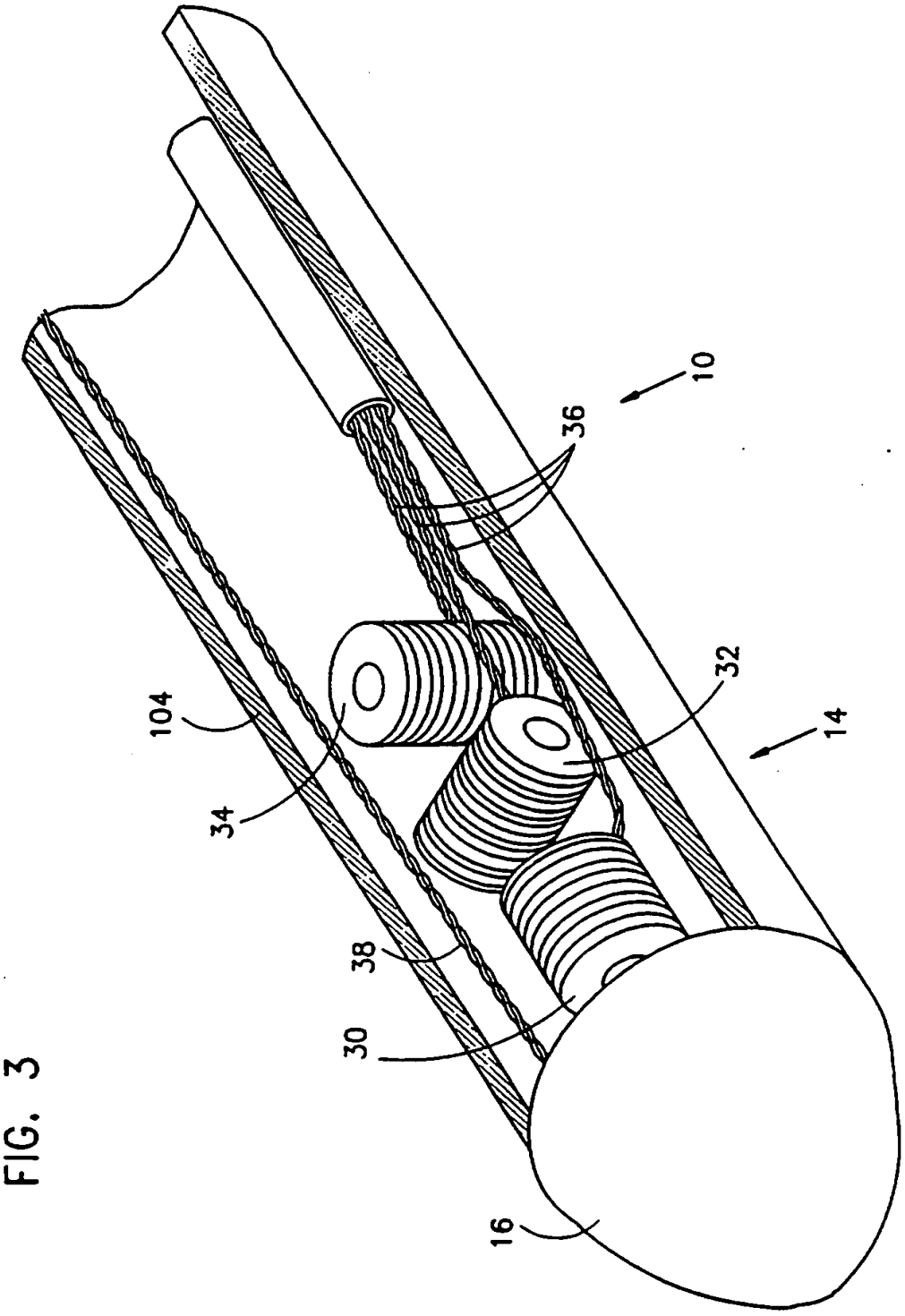


FIG. 3

SUBSTITUTE SHEET (RULE 26)

FIG. 4

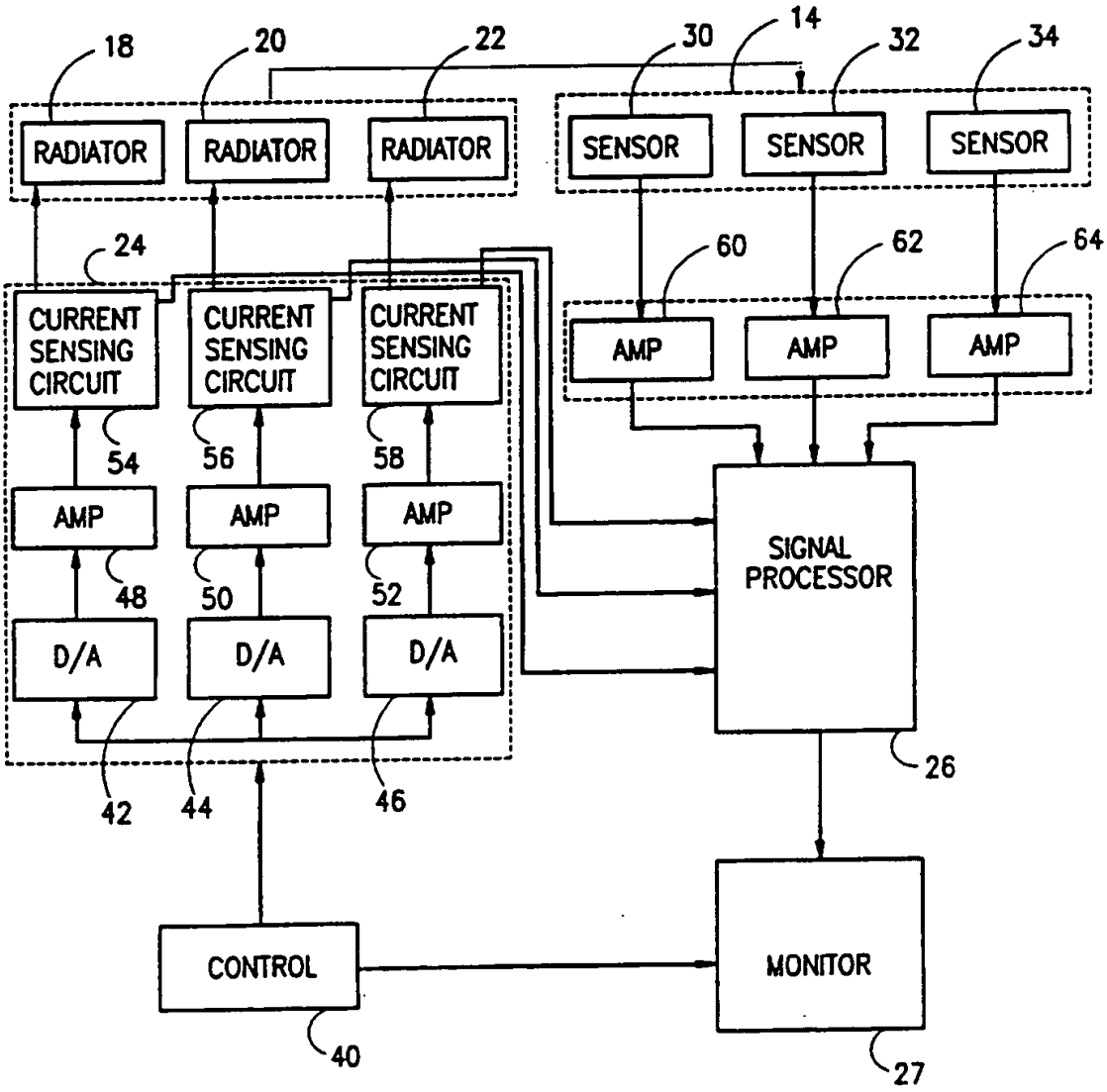

18
20
22
30
14
32
34
RADIATOR
RADIATOR
RADIATOR
SENSOR
SENSOR
SENSOR
24
60
62
64
CURRENT SENSING CIRCUIT
CURRENT SENSING CIRCUIT
CURRENT SENSING CIRCUIT
AMP
AMP
AMP
54
56
58
AMP
AMP
AMP
48
50
52
SIGNAL PROCESSOR
D/A
D/A
D/A
26
42
44
46
CONTROL
MONITOR
40
27

FIG. 5

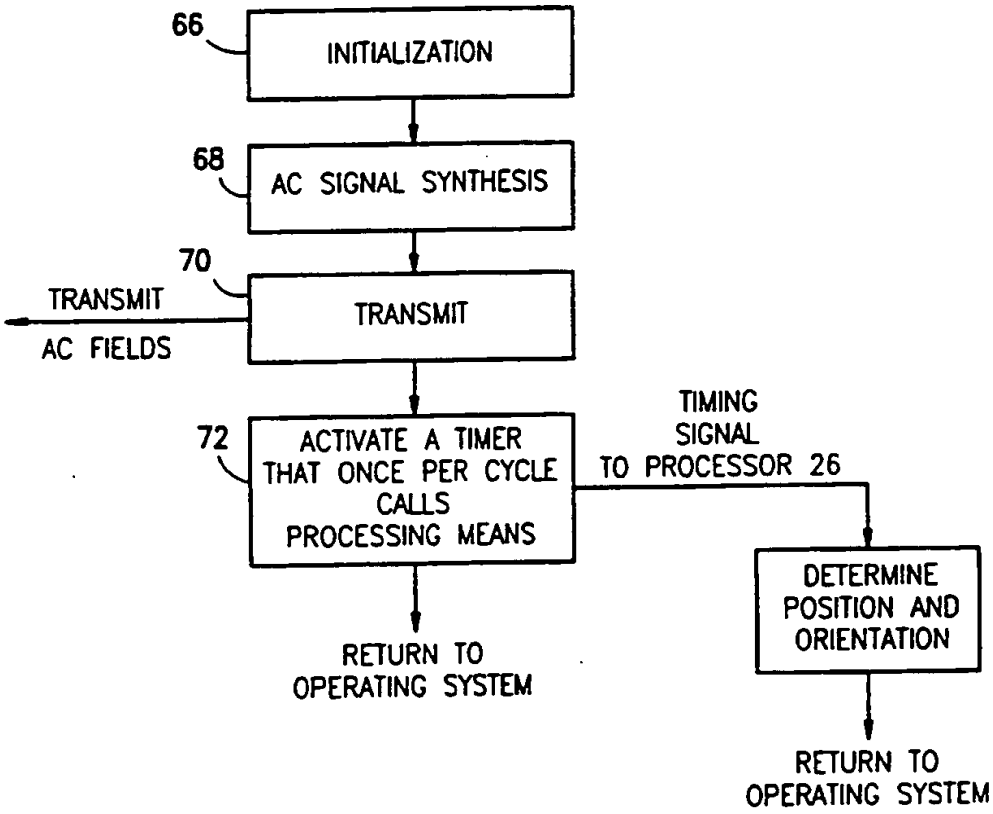

66
INITIALIZATION
68
AC SIGNAL SYNTHESIS
70
TRANSMIT
TRANSMIT AC FIELDS
72
ACTIVATE A TIMER THAT ONCE PER CYCLE CALLS PROCESSING MEANS
TIMING SIGNAL TO PROCESSOR 26
RETURN TO OPERATING SYSTEM
DETERMINE POSITION AND ORIENTATION
RETURN TO OPERATING SYSTEM

FIG. 6

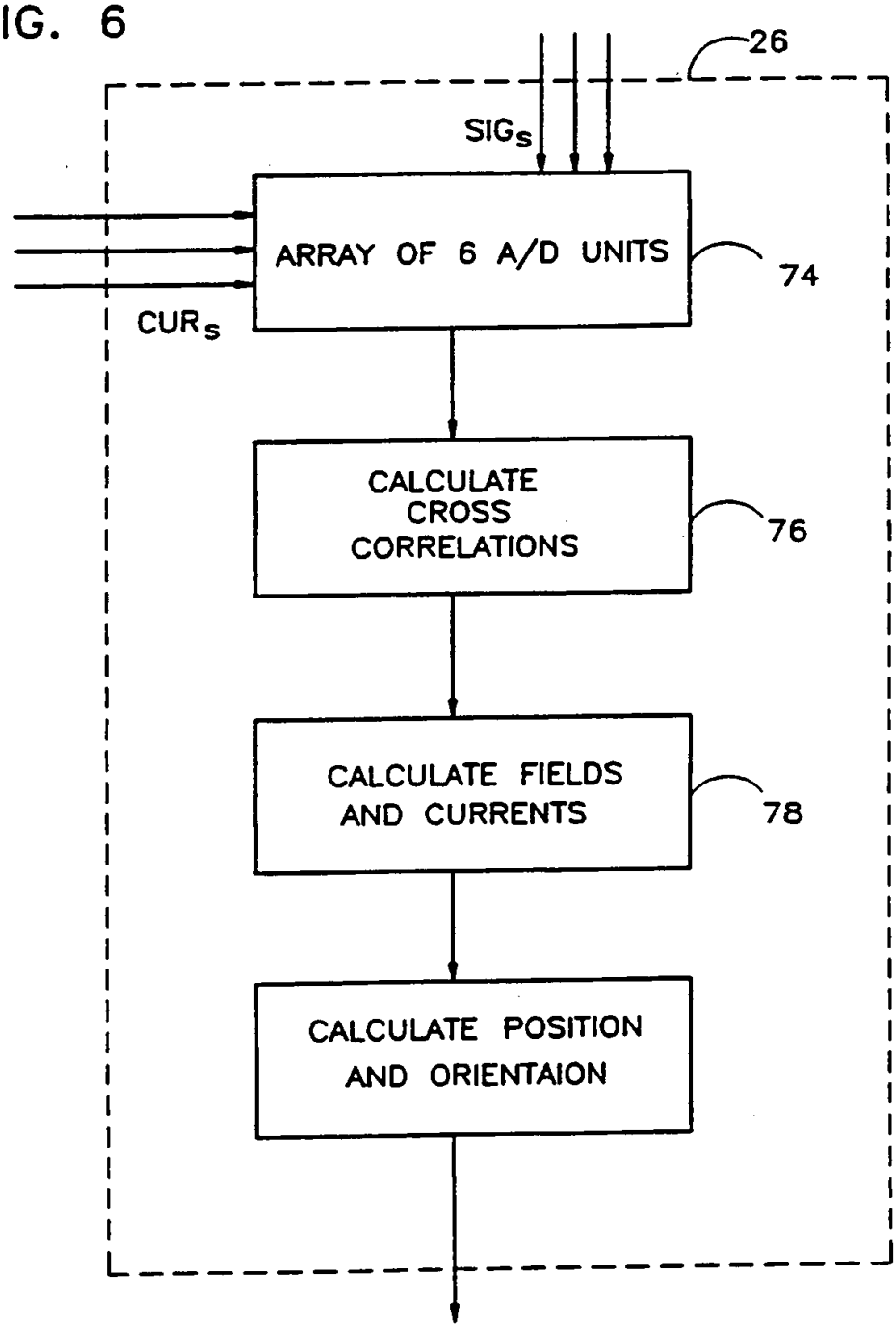
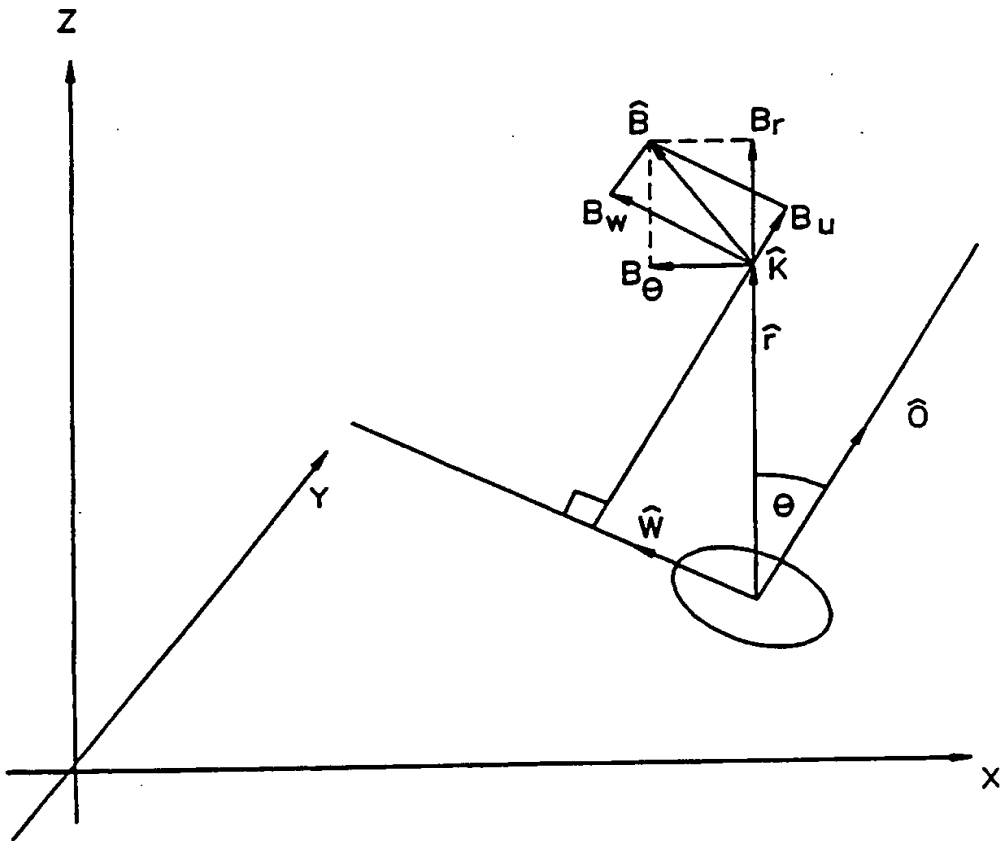
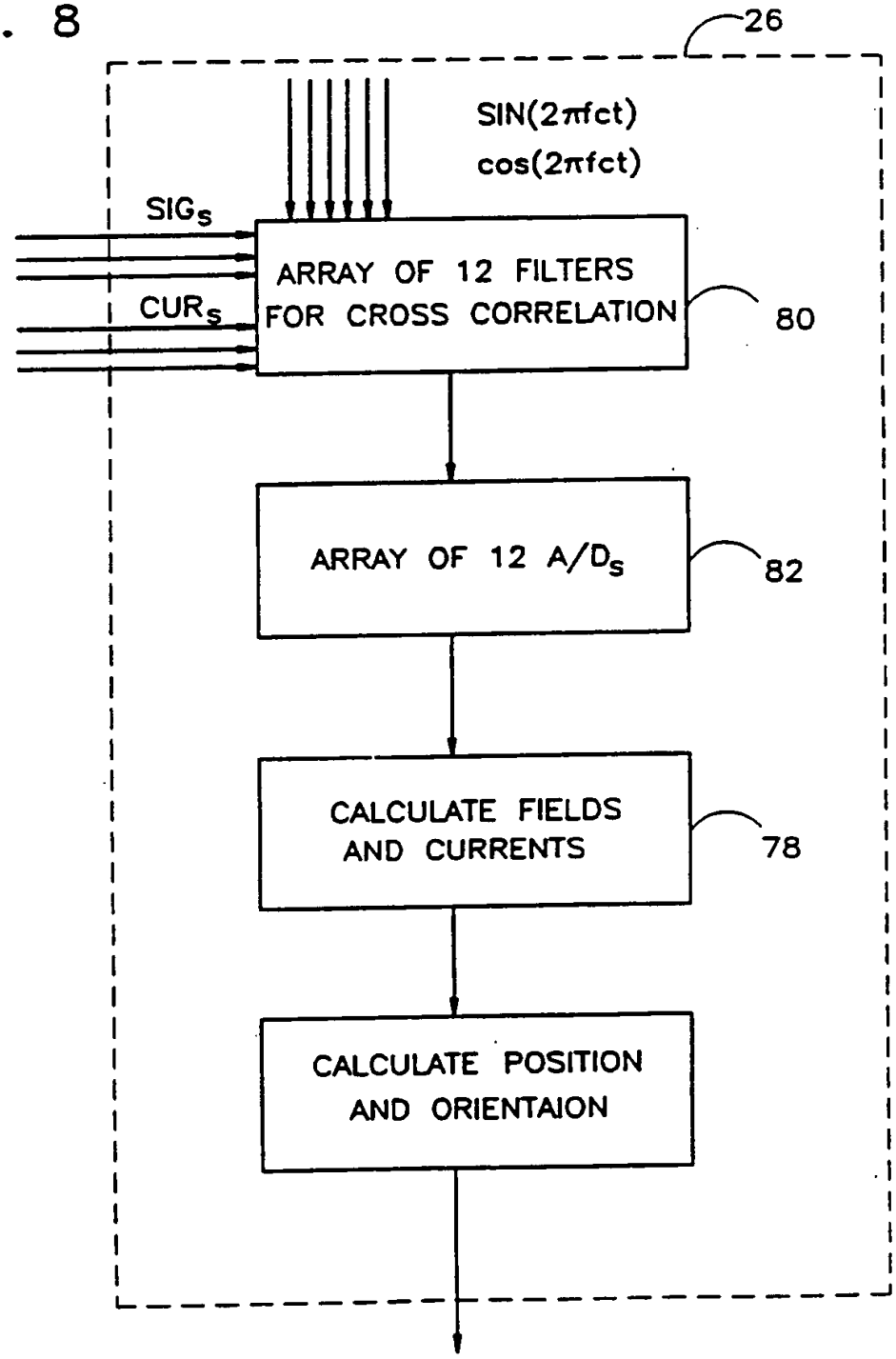

26
SIG$_S$
ARRAY OF 6 A/D UNITS
74
CUR$_S$
CALCULATE CROSS CORRELATIONS
76
CALCULATE FIELDS AND CURRENTS
78
CALCULATE POSITION AND ORIENTAION

FIG. 7



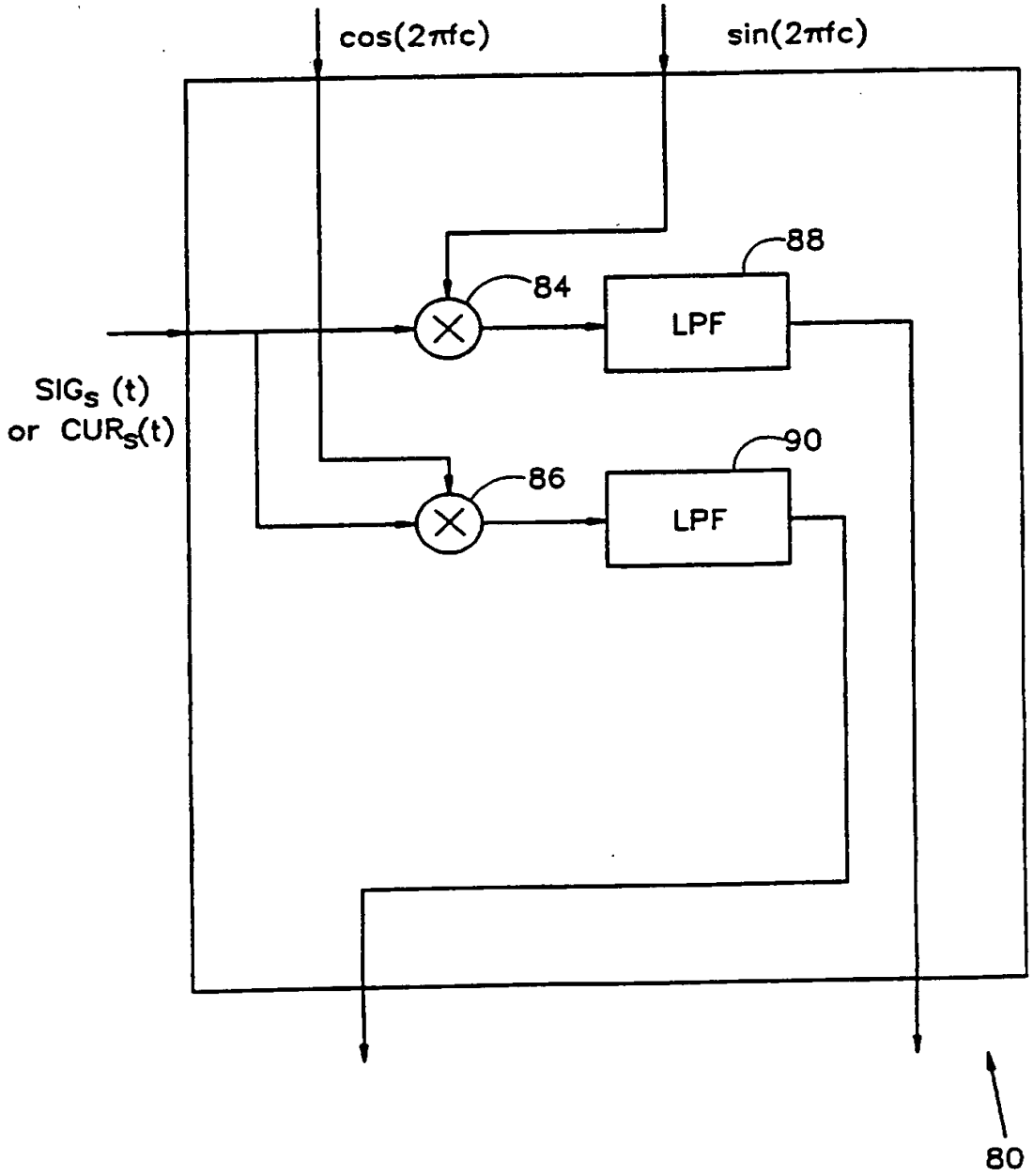
SUBSTITUTE SHEET (RULE 26)

FIG. 8



SUBSTITUTE SHEET (RULE 26)

FIG. 9



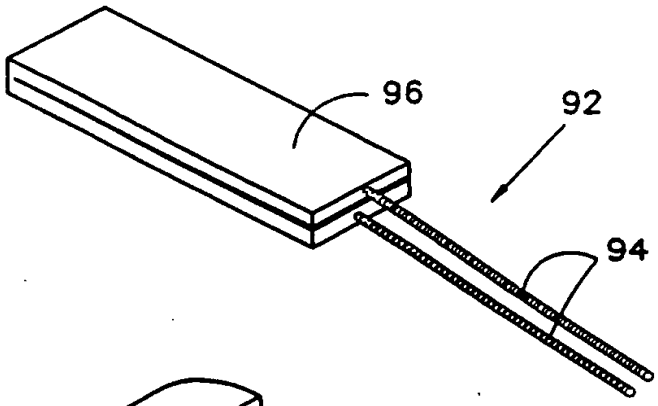


FIG. 10A

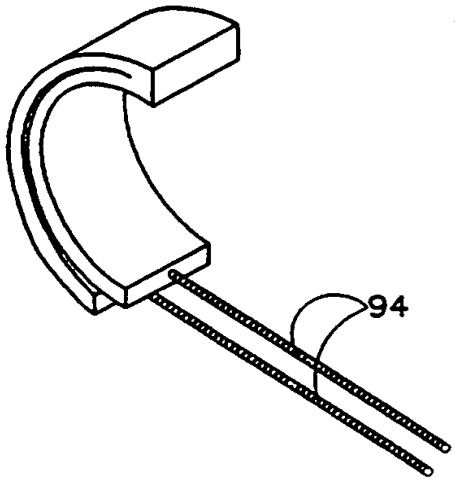


FIG. 10B

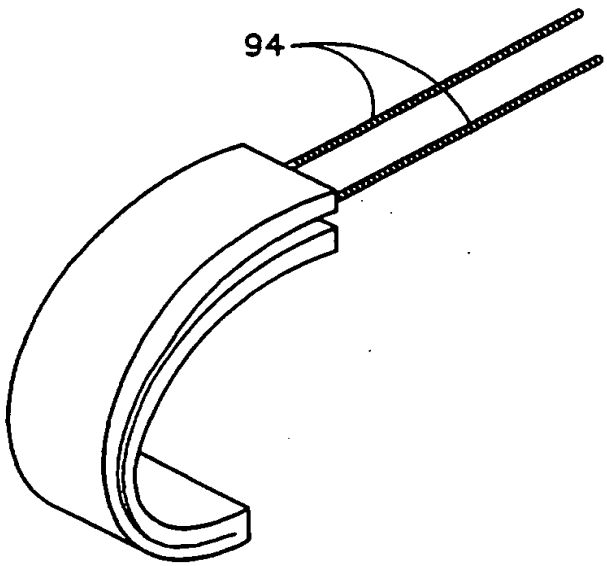
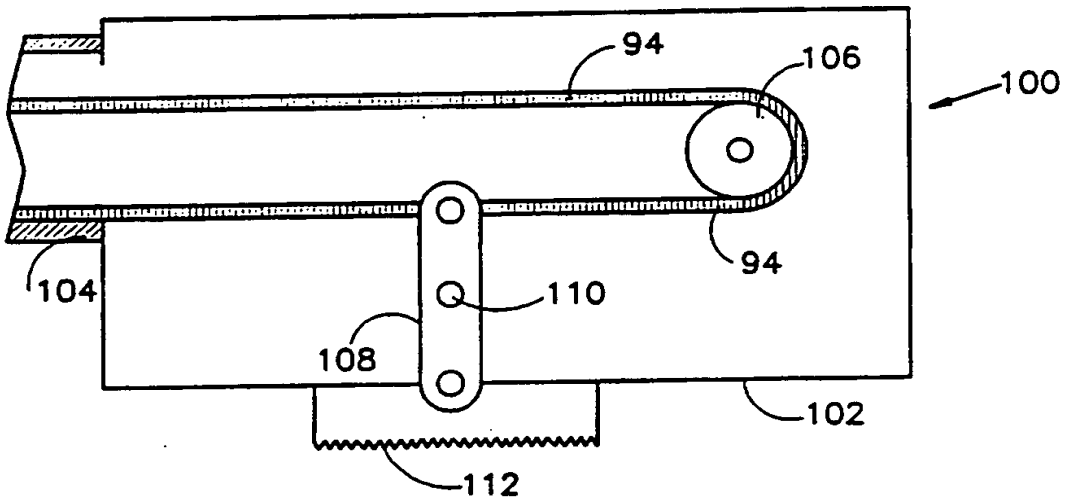


FIG. 10C

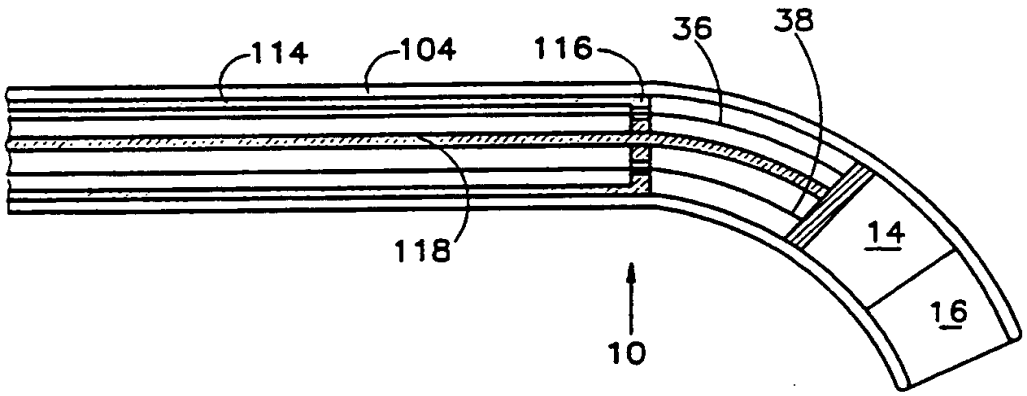
SUBSTITUTE SHEET (RULE 26)

FIG. 10D



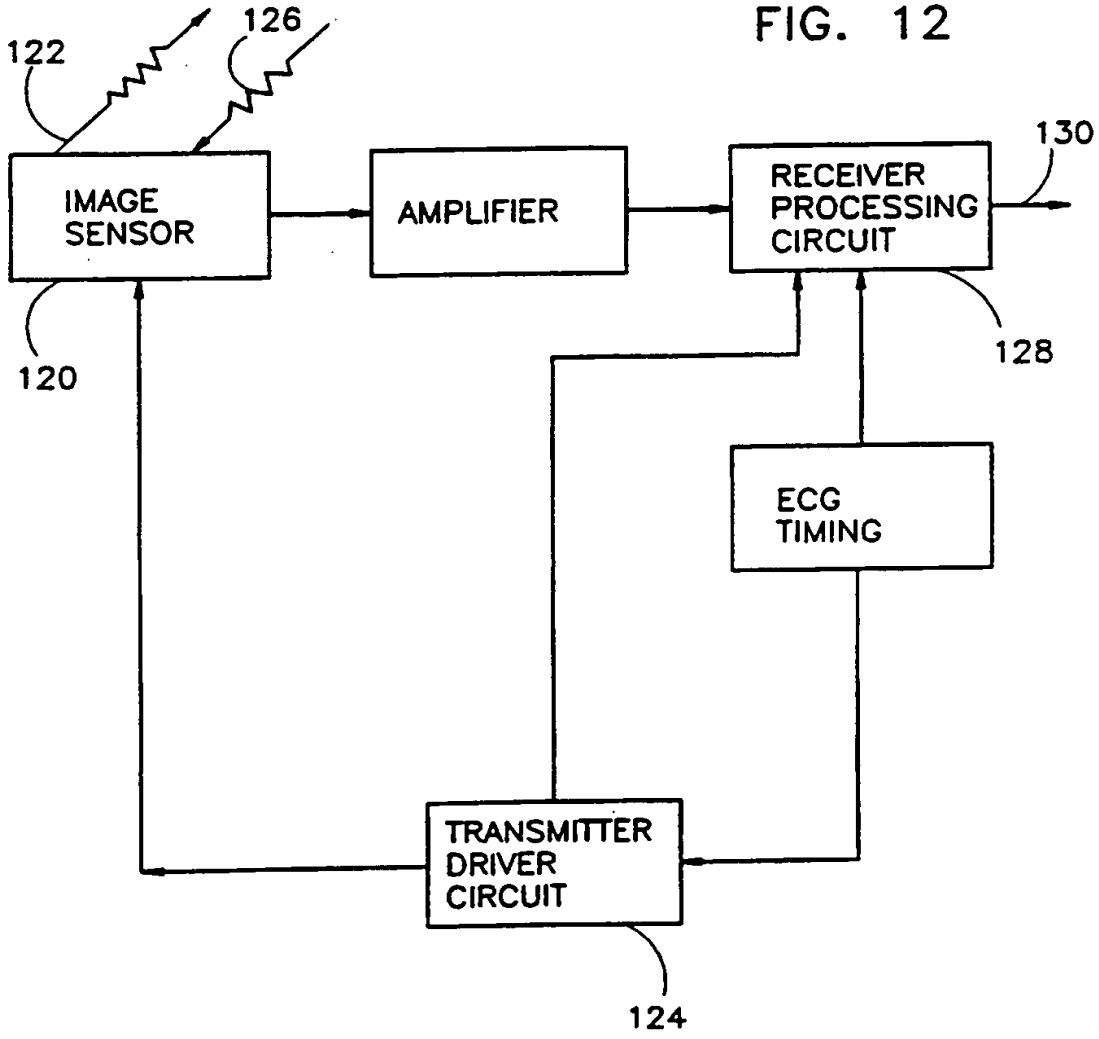
SUBSTITUTE SHEET (RULE 26)

FIG. 11



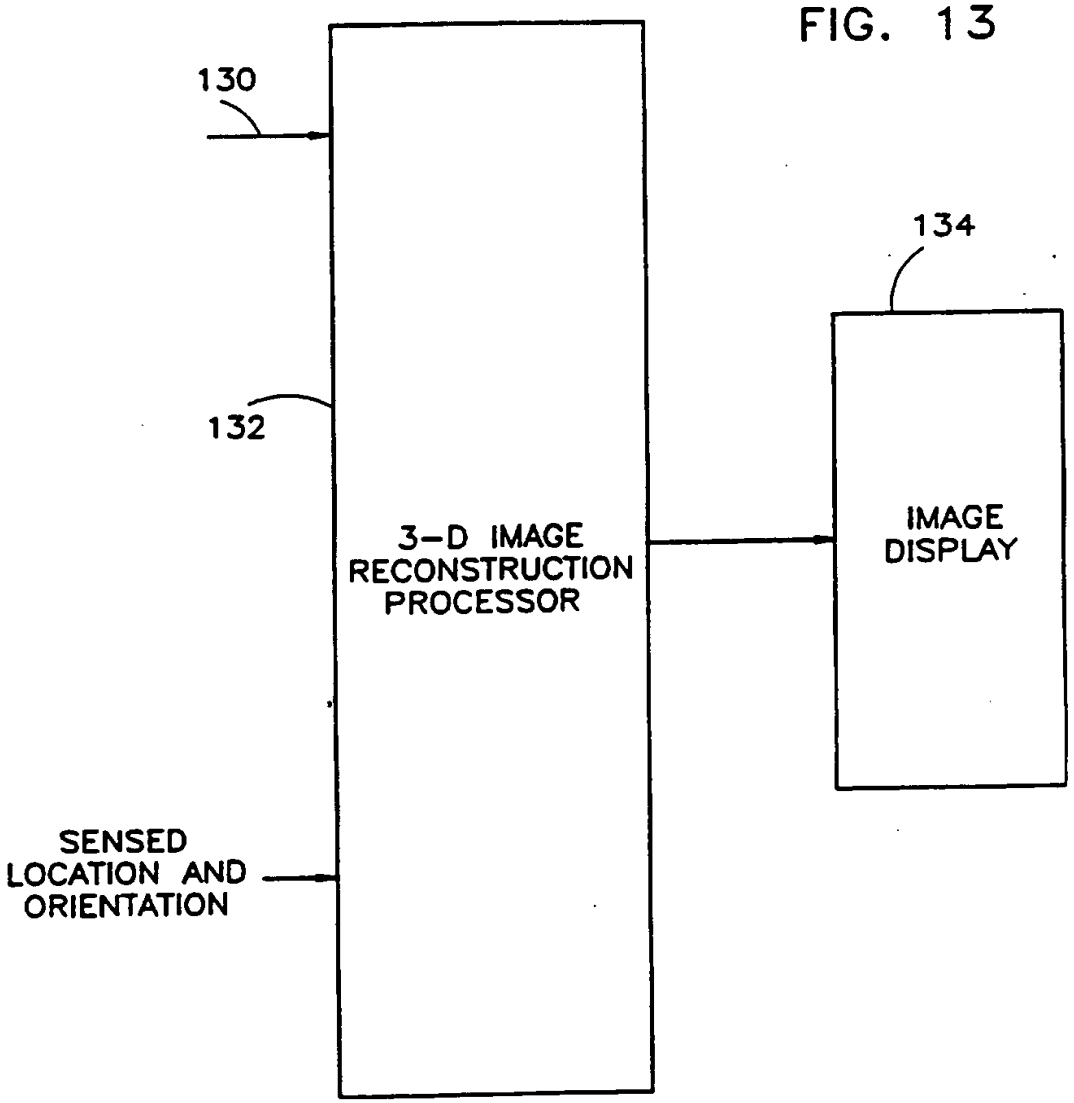
SUBSTITUTE SHEET (RULE 26)

FIG. 12



SUBSTITUTE SHEET (RULE 26)

FIG. 13



SUBSTITUTE SHEET (RULE 26)

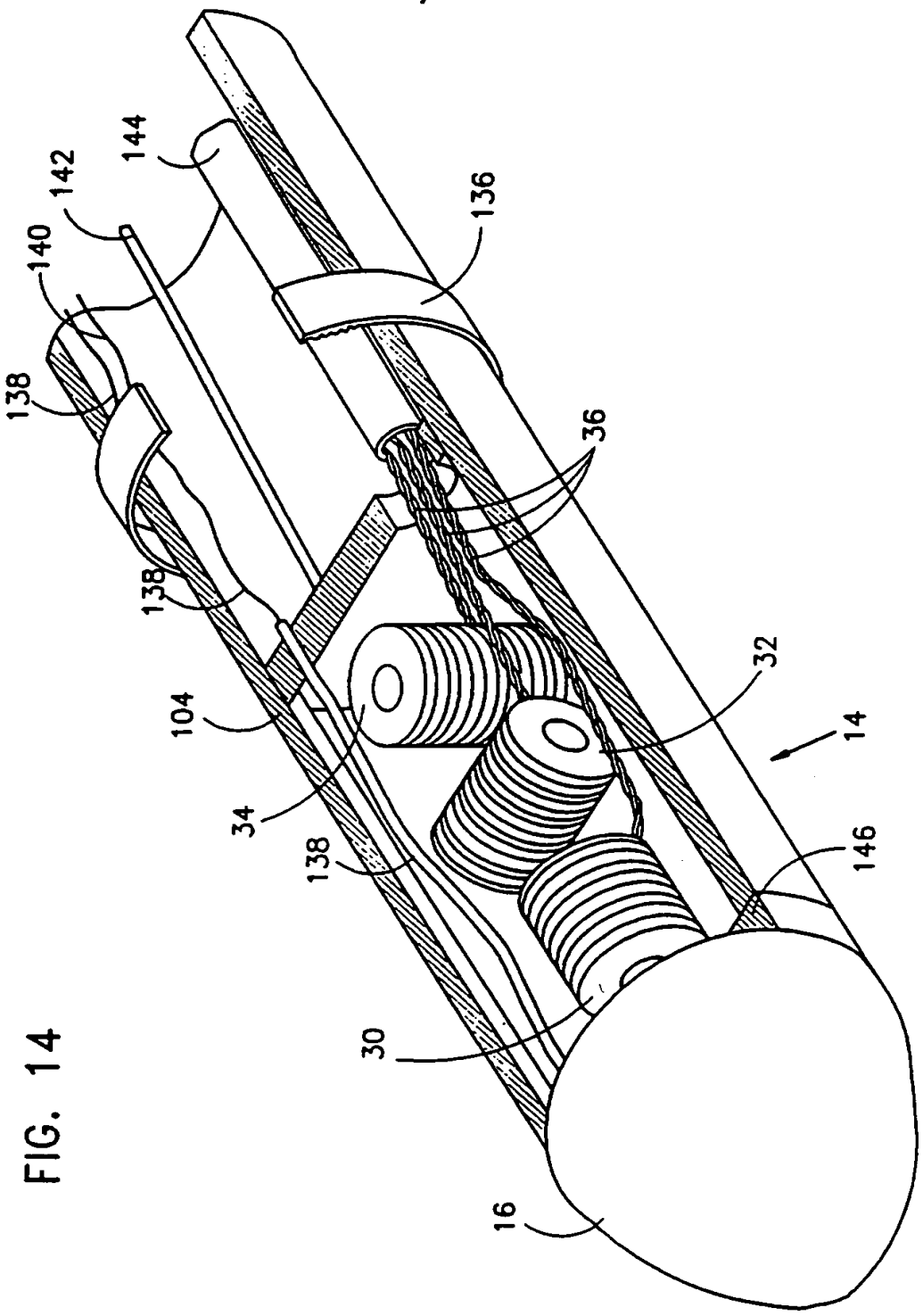


FIG. 14

SUBSTITUTE SHEET (RULE 26)

FIG. 15

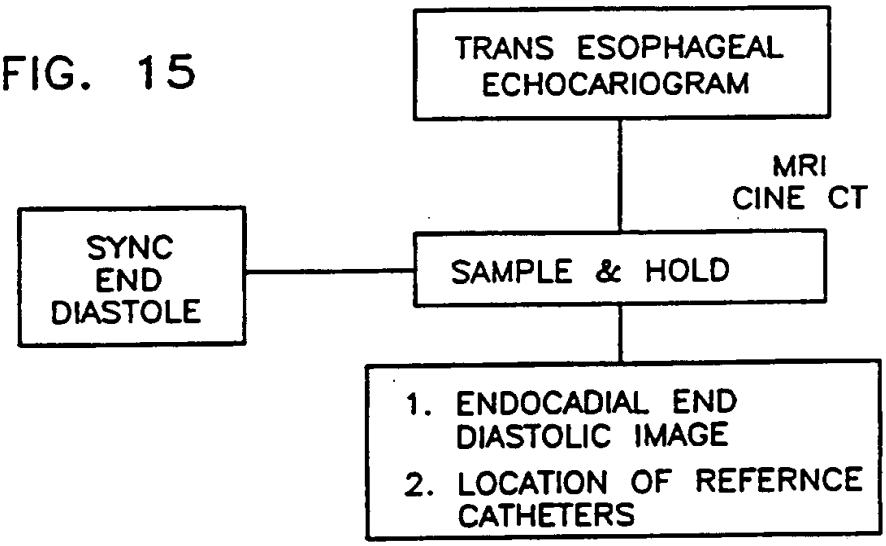
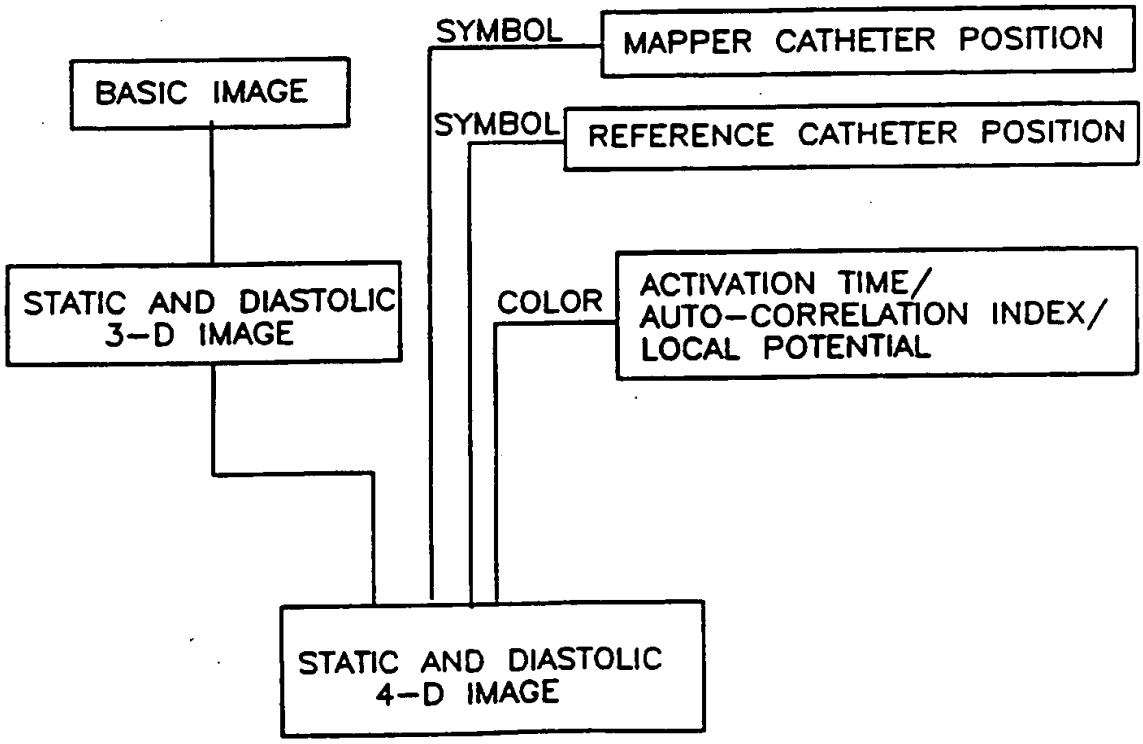


FIG. 19



SUBSTITUTE SHEET (RULE 26)

FIG. 16

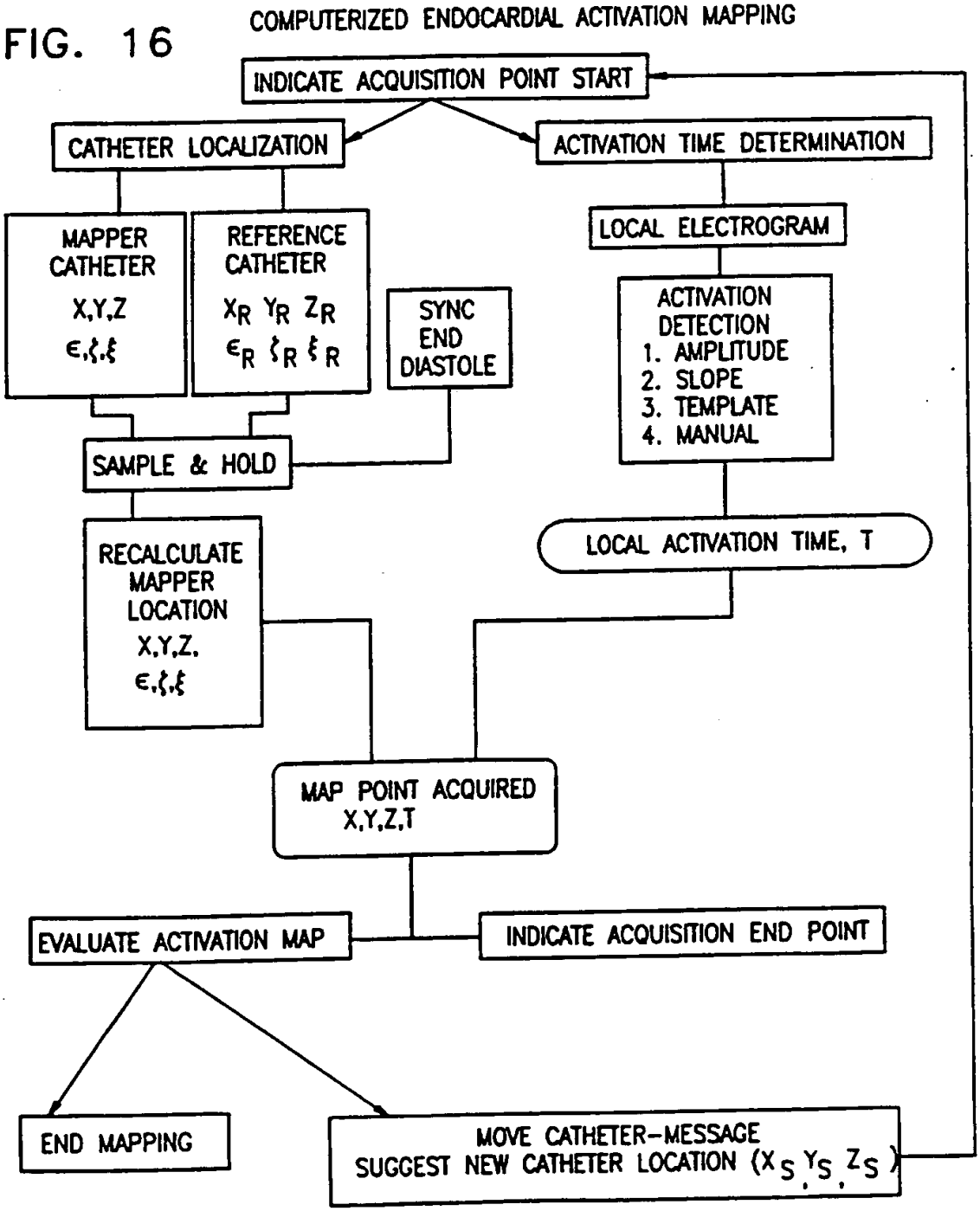
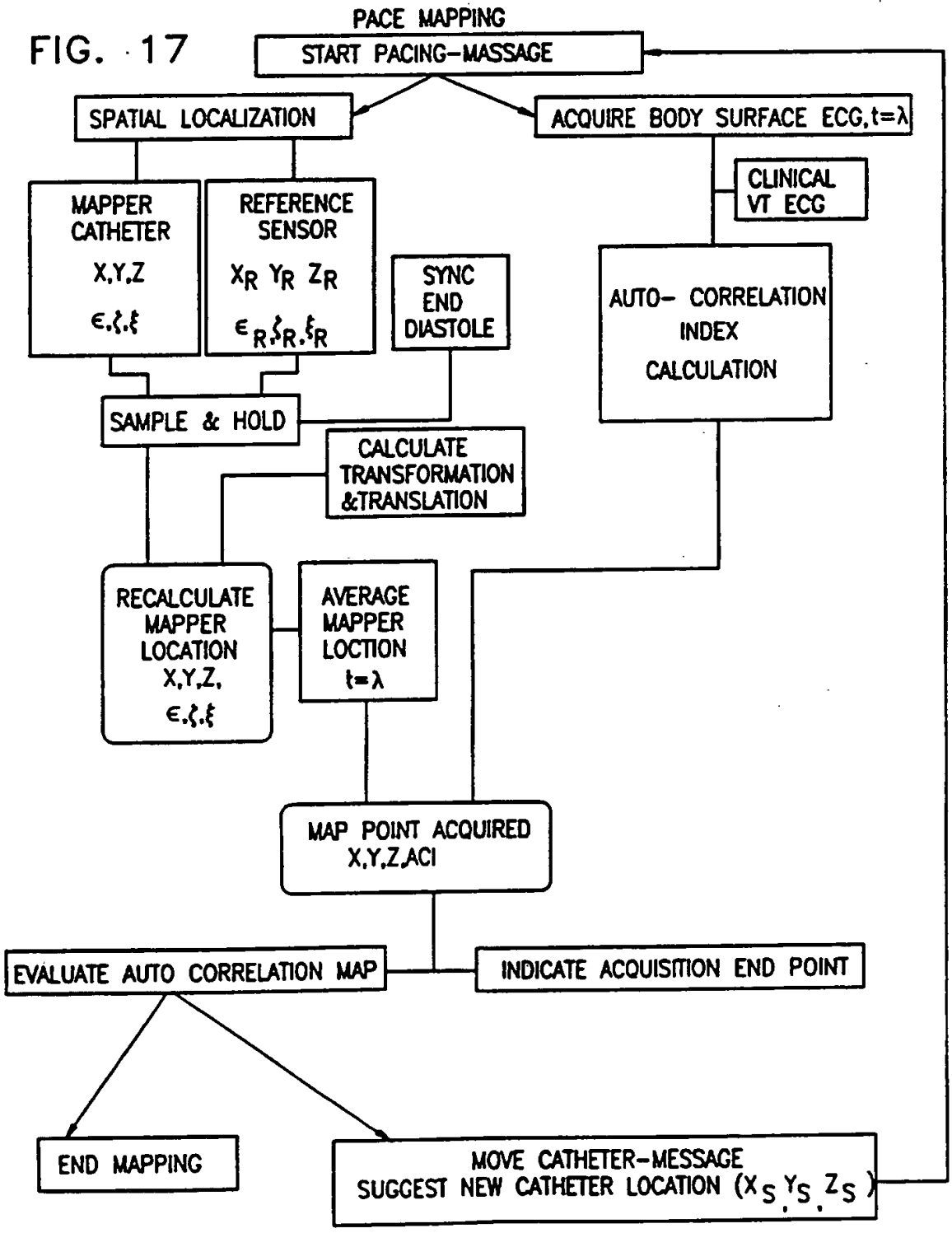

COMPUTERIZED ENDOCARDIAL ACTIVATION MAPPING
INDICATE ACQUISITION POINT START
CATHETER LOCALIZATION
ACTIVATION TIME DETERMINATION
MAPPER CATHETER
X,Y,Z
∈,ξ,ξ
REFERENCE CATHETER
X_R Y_R Z_R
ϵ_R ξ_R ξ_R
SYNC END DIASTOLE
LOCAL ELECTROGRAM
ACTIVATION DETECTION
1. AMPLITUDE
2. SLOPE
3. TEMPLATE
4. MANUAL
SAMPLE & HOLD
RECALCULATE MAPPER LOCATION
X,Y,Z,
∈,ξ,ξ
LOCAL ACTIVATION TIME, T
MAP POINT ACQUIRED
X,Y,Z,T
EVALUATE ACTIVATION MAP
INDICATE ACQUISITION END POINT
END MAPPING
MOVE CATHETER-MESSAGE
SUGGEST NEW CATHETER LOCATION (X_S Y_S Z_S)

FIG. 17



SUBSTITUTE SHEET (RULE 26)

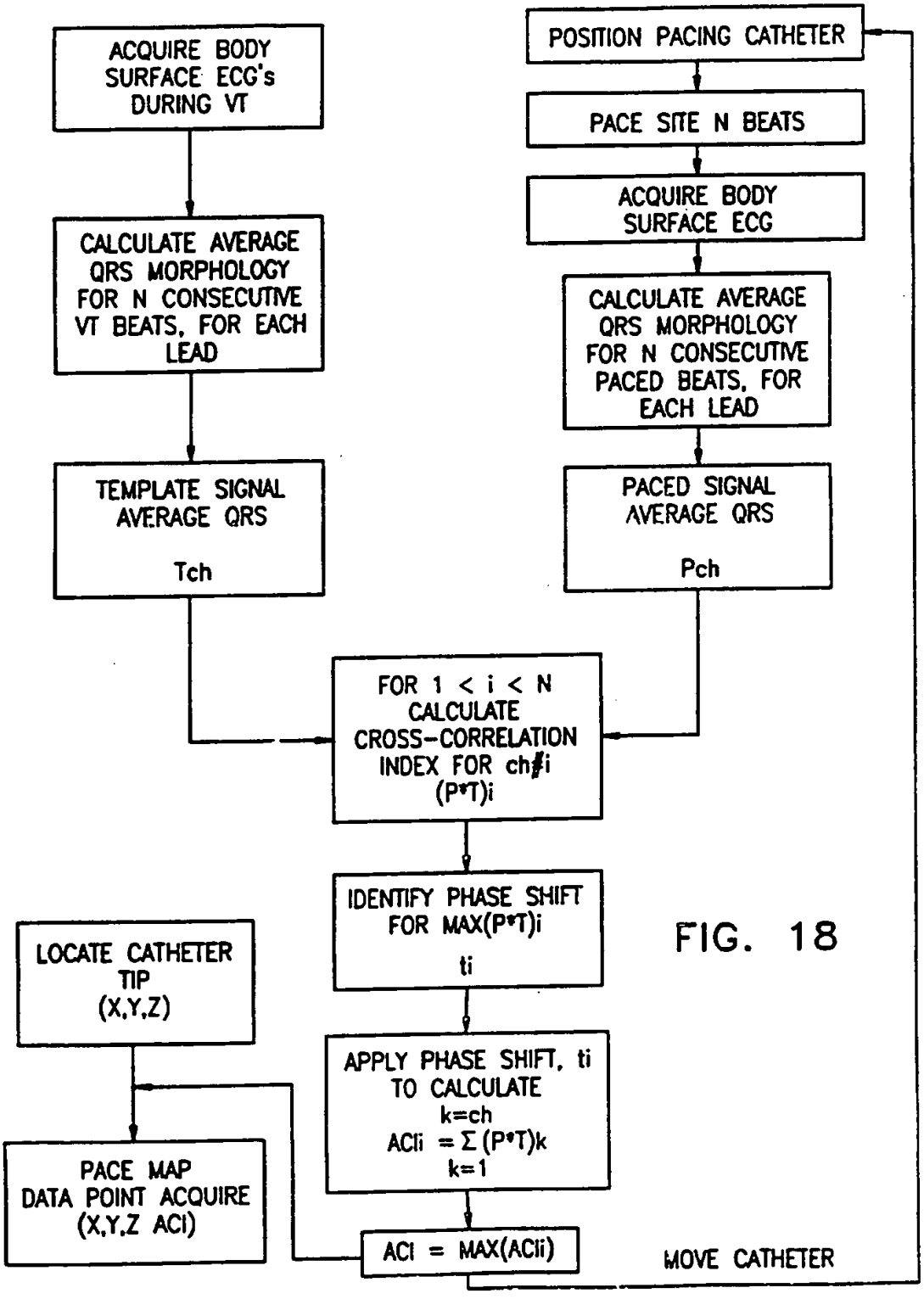

ACQUIRE BODY SURFACE ECG's DURING VT
CALCULATE AVERAGE QRS MORPHOLOGY FOR N CONSECUTIVE VT BEATS, FOR EACH LEAD
TEMPLATE SIGNAL AVERAGE QRS
Tch
POSITION PACING CATHETER
PACE SITE N BEATS
ACQUIRE BODY SURFACE ECG
CALCULATE AVERAGE QRS MORPHOLOGY FOR N CONSECUTIVE PACED BEATS, FOR EACH LEAD
PACED SIGNAL AVERAGE QRS
Pch
FOR 1 < i < N CALCULATE CROSS-CORRELATION INDEX FOR ch#i (P*T)i
IDENTIFY PHASE SHIFT FOR MAX(P*T)i
ti
APPLY PHASE SHIFT, ti TO CALCULATE
k=ch
ACIi = Σ (P*T)k
k=1
ACI = MAX(ACIi)
LOCATE CATHETER TIP (X,Y,Z)
PACE MAP DATA POINT ACQUIRE (X,Y,Z ACI)
MOVE CATHETER

FIG. 18